



## Is Oak Wilt really a threat to New York State landscapes and forests?

Karen Snover-Clift and Emma Rosenthal, Cornell University, PPPMB, Plant Disease Diagnostic Clinic

When asked what the most devastating oak tree diseases are, most plant pathologists will answer with oak wilt as one of their top picks. This disease has been an issue in the Midwestern and Mid-Atlantic States since it was first discovered in Wisconsin in 1944. The Plant Disease Diagnostic Clinic (PDDC) at Cornell University began a project in 2015 with the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Agriculture and Markets (NYSDAM) to survey the state for oak wilt and determine whether the disease is established within our borders. Oak wilt was identified in NYS for the first time in 2008 and a second time in the same area in 2013. Our project was designed to allow us to 1) look for visual symptoms on red oaks at potentially high-hazard sites around the state and collect symptomatic tissue samples, 2) determine if symptomatic samples contain the pathogen that causes oak wilt, and 3) determine if newly developed PCR identification techniques will provide consistent results from pure cultures of the fungus and directly from plant material. As this project continues in 2016, we hope it will help us learn if there are other pockets of oak wilt infections around the State.

The topic of oak wilt always brings up lots of questions when I talk about this disease in extension presentations I give and with

this article, I hope to inform readers of our ongoing oak wilt project and our search for symptomatic trees. You will also find answers to the most common questions that arise when this topic comes up.

### History of oak wilt in NY

We know the pathogen, *Ceratocystis fagacearum*, can survive and cause considerable damage in areas that have similar temperature ranges, weather conditions and tree species as are found throughout New York. Our history involves many years of finding trees with symptoms similar to oak wilt (marginal leaf scorch, vascular discoloration, rapid wilt and death) but never being able to isolate the organism from damaged tissue. That was true until 2008, when a very observant Cornell Cooperative Extension Educator suspected oak wilt in a residential area in Schenectady County and collected samples for submission to the Plant Disease Diagnostic Clinic at Cornell. Our team was able to isolate and identify the pathogen based on visual characteristics, but to be absolutely sure we requested the help from an expert at Iowa State University who quickly confirmed the pathogen using molecular techniques. The pathogen was suspected and confirmed again in 2013 in the same neighborhood. The nearest known oak wilt infection at that time was approximately 180 miles to the southwest in central Pennsylvania,



Individual leaf symptoms © Joseph OBrien, USDA Forest Service, Bugwood.org



so how the pathogen came to this area is unknown. However, most researchers suspect inadvertent transport of firewood cut from infected trees somewhere as the most likely mode of transport into our area. Extensive measures were taken to control the spread in the Schenectady County neighborhood and following the 2013 discovery, further testing around this area has shown no evidence of subsequent disease in the area.

### Signs and symptoms

Buoyed by the success of our rapid confirmation of the disease and prompt removal of diseased or possibly diseased tree in the area, we are convinced that a lot of money and headaches can be avoided if it is found early enough. So we really need those of you who are regularly out in our green spaces to familiarize yourselves with the symptoms of oak wilt and don't hesitate to bring *any* suspicious red oaks to our attention. Signs and symptoms that *may* be indicative of the disease typically begin in June or July when infected oaks exhibit rapid leaf wilt, often large portions of the crown. "Flags" like those common with early development of Dutch elm disease on elms are not so common or easy to see in oaks with oak wilt, but extensive wilt of 25% or more of any red oak crown is cause for concern. Red oaks are more susceptible than white oaks and therefore tend to wilt more quickly, in as little as three weeks. Leaves often show marginal "scorch" or browning around the edges and vascular discoloration may be visible under the bark on the current season's growth. Note, however, that these two symptoms are not always present even in confirmed cases so their absence does not rule out the disease. As a diseased tree nears death, fungal pads will form between the bark and the wood. At first, they are totally out of sight, but over time they will expand and create enough pressure to crack the bark. Spore producing fungal cells surrounding the pads produce a distinctive sweet odor that is often described to be like that of a rotting melon or stale beer. Late in the season, it may be possible to observe these fungal pads on diseased trees.



Close-up view of oak wilt fungal mat on peeled stem © USDA Forest Service, USDA Forest Service, Bugwood.org

Worthy of note is that early descriptions of the disease indicated that only red oak trees are susceptible to infection and suffer rapid decline. While in some areas this may appear to be true, colleagues who have devoted entire careers to oak wilt study encourage us to consider a slower period of decline for red oaks in certain sites. Not all diseased red oaks show the rapid crown collapse.

Furthermore, they ask us to remain vigilant for decline of species in the white oak group. Symptom development is typically slower in white oaks, and we now believe that the pathogen can remain "dormant" in some white oaks for long periods of time (several years?) before finally showing characteristic symptoms followed by decline and death.

### **BOLO Alert-Be On the Look Out for:**

- ▶ Wilting leaves beginning in June
- ▶ Marginal scorch
- ▶ Vascular discoloration under bark
- ▶ Mycelial mats or pads under bark
- ▶ Mats/Pads have an odor of stale beer or rotting fruit

### Reporting suspect samples

If you notice any of the suspect signs or symptoms on oak trees within New York State, please contact your local Cornell Cooperative Extension Office (CCE), the Cornell Plant Disease Diagnostic Clinic, or the New York State Department of Environmental Conservation. If you would like to submit a sample from your own property for testing or if you would like more information, please visit our website at [www.plantclinic.cornell.edu/oakwiltpage.html](http://www.plantclinic.cornell.edu/oakwiltpage.html). Here you will find posters and postcards with a description of the disease and contact information, a sample submission form specifically for an oak wilt suspect submission, and instructions regarding how to collect a good sample. Our survey project is funded by a Specialty Crops Block Grant program, and suspect samples submitted specifically for oak wilt testing will be processed free of charge. Please do not attempt to collect samples from private or public property without consulting an extension agent or state forester.

If you want to help inform others of the need to be on the lookout for oak wilt, please contact either Karen Snover-Clift at the Cornell University PDDC to receive informational poster and postcards mentioned above. Thanks in advance for your help in protecting New York State's oaks!

### **What should you do if you suspect a tree is infected with Oak Wilt?**

- ▶ Go to the Cornell PDDC website for images to view and more detailed descriptions of symptoms.
- ▶ Contact your local CCE office, the PDDC, NYSDEC or NYSDAM for guidance on how to proceed.
- ▶ If your tree, consider collecting a sample for submission to the PDDC.
- ▶ If not your tree, write down a description of the area and pass on the sighting to one of the listed contacts.

**George Hudler's Oak Wilt Video on YouTube**  
[www.youtube.com/watch?v=XVUZsyZfVE](http://www.youtube.com/watch?v=XVUZsyZfVE)